

Fracture of an Orogastric tube in a stroke patient: A case report

Surendra Khanal¹, Pramesh Shrestha¹, Aayush Adhikari², Suraj Shrestha², Sanjeev Kharel², and Ramesh Khadayat²

¹Tribhuvan University Teaching Hospital

²Tribhuvan University Institute of Medicine

June 1, 2022

Abstract

Orogastric and nasogastric tube are common methods of enteral feeding. While simple, these methods are not free of complications. A rare complication of these feeding methods is the fracture of the tube. This report describes a fracture of an orogastric tube in a 58-year-old stroke patient.

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Author details: Surendra Khanal¹, Pramesh Sunder Shrestha¹, Aayush Adhikari², Suraj Shrestha², Sanjeev Kharel², Ramesh Khadayat²

¹Department of Critical Care Medicine, Tribhuvan University, Teaching Hospital, Kathmandu, Nepal

² Maharajgunj Medical Campus, Institute of Medicine, Maharajgunj, Kathmandu, Nepal

Corresponding author: Dr. Surendra Khanal, Department of Critical Care Medicine, Tribhuvan University, Teaching Hospital, Maharajgunj, Kathmandu, Nepal, Email: surendrastic@gmail.com

Key Clinical Message:

Orogastric and nasogastric tubes are common methods of enteral feeding. Though the methods of tube feeding are simple, these methods are not free of complications. A rare complication of these feeding methods is a fracture of the tube. This case report describes a 58-year-old patient with the diagnosis of stroke, in whom there was a fracture of an orogastric tube.

Keywords: *Enteral feeding, orogastric tube, fracture*

Introduction:

Critical illness is thought to be a catabolic state which puts critical patients at significant risk of malnutrition. The illnesses in critical patients induce inflammation, which is a significant risk factor for malnutrition¹. Evidence-based guidelines suggest that enteral nutrition is superior to parenteral nutrition². Early enteral feeding in patients in whom there is no contradiction for the same is associated with improved organ survival and recovery and decreased incidence of infections that decreases the ICU stay and improve the overall outcome.³ Enteral feeding can either be delivered to the stomach or distally. The usual methods of gastric feeding are orogastric and nasogastric routes. These enteric feeding methods are also used for decompression of the stomach. These methods are simple and easy in terms of access but are not devoid of complications.

There are few case reports about fractures of feeding tubes. We present a rare case of fracture of an orogastric tube in a patient, admitted to the ICU with the diagnosis of posterior circulation stroke. The distal part of the fractured tube was retrieved in the ICU under vision under a laryngoscope without any complication.

Case Presentation

A 58-year male developed a sudden onset of weakness in the right half of the body along with slurring of speech and difficulty in swallowing. For the same, the patient went to a local center where he was diagnosed to have a posterior circulation stroke. He was referred to a tertiary care center where he underwent Digital Subtraction Angiography and a thrombectomy. The procedure was uneventful and the patient stayed there at the ICU, intubated for five days before coming to our center against medical advice for financial constraints. On presentation to our ICU, the patient also had a fever and he was started on piperacillin-tazobactam after sending for pan-culture. According to the ICU protocol, he was started on enteral nutrition via an orogastric tube. The patient tolerated the feeds well and he was continued on the same. Gastric aspirate volume was less than 150 ml throughout the ICU stay.

On the third day of admission, the patient also developed septic shock and required noradrenaline support for two days. The culture report returned positive for *Klebsiella pneumoniae* in the sputum which was sensitive to the started antibiotics. However, the fever did not subside and a repeat culture on the fourth day of admission returned positive for methicillin-resistant *Staphylococcus aureus*, sensitive to amikacin.

Multiple attempts to wean the patient off the ventilator were unsuccessful and anticipating a prolonged requirement of mechanical ventilation, the endotracheal tube was changed to a tracheostomy tube via a percutaneous approach on the 10th day of admission and the 17th day of intubation. The patient was continued on feed via an orogastric tube.

We tried to wean the patient off the ventilator after tracheostomy but the patient developed tachypnea and desaturation every time we de-escalated mechanical ventilation. The orogastric tube was changed once after 20 days in the ICU. After the 25th day of his stay in our ICU, antibiotics were stopped as the patient became afebrile for 48 hours. However, only 4 days after stopping the antibiotics, he developed a fever again and he was started on meropenem and vancomycin. His urine routine and culture showed infection with *Enterococcus faecalis*, sensitive to polymyxin B and the antibiotics were replaced accordingly. The patient's party was counseled regarding the option of Percutaneous Endoscopic Gastrostomy for the likelihood of long-term requirement of a feeding tube, but they refused the escalation of care and also signed a do not resuscitate order.

On the 40th day of admission, the nasogastric tube was changed for obstruction. The 16 Fr tube was replaced by another of the same size. Its position was confirmed clinically by listening to the gush of airflow into the stomach using a 50 ml syringe and a stethoscope. Feeding attempts after insertion of the tube were uneventful.

On the 45th day of ICU admission, during regular feeding, the proximal end of the orogastric tube was found broken by the caring nurse. The distal end was nowhere to be seen in the oral cavity. The patient was immediately sedated and paralyzed on the suspicion of a fractured, orogastric tube. A laryngoscopic examination of the patient revealed that the proximal end of the distal part in the proximal esophagus and the distal part was retrieved using Magill forceps. (Figure 1) Another orogastric tube was inserted two hours after the event and the patient was started on oral feed immediately. The patient tolerated the feed and was continued on the same.

Discussion:

Critical patients are at risk of multiple complications owing to both their illnesses and malnutrition. From having just a supportive role of maintaining lean body mass and immunity, the view on the role of nutrition has evolved into a more complicated one like minimizing metabolic response to inflammation and evading disease-related malnutrition^{2, 4}. As enteral feeding is more physiological and associated with less frequency of complications than parenteral feeding, in our center enteral feeding is preferred in cases with no contradiction.

Nasogastric and orogastric tubes are the most commonly inserted feeding tubes. In most cases, they are inserted blindly. Not only for feeding, but they are also used for gastric and intestinal decompression in intestinal obstructions, gastric lavage, and general anesthesia before emergency surgical procedures. We

counseled the patient's party regarding the alternative ways of enteral feeding like percutaneous endoscopic gastrostomy, given the risk of aspiration in long-term orogastric feeding. However, any surgical procedures were declined by the patient party who chose to continue on the orogastric tube feeding.

In most cases, enteral feeding via a nasogastric or orogastric tube is a safe procedure. Relative contraindications include conditions associated with trauma like skull base fracture and facial bone fractures. In these conditions, it is recommended to insert an orogastric tube under direct vision in place of an orogastric tube.⁵ There have been reported fatal incidents of insertion into the cranium itself in patients with basilar skull fracture⁶. Esophageal trauma or obstruction is another contraindication of orogastric tube insertion. It can worsen the injury, cause perforation or even get easily misplaced, especially in corrosive chemical ingestions.⁷

Other more commonly encountered problems include discomfort, obstruction of the tube, and trauma during insertion. Tube blockage occurs due to a variety of causes among which coagulation of feeding formula, tube kinking, medication fragments, and incompatible infusate precipitation are the common ones.⁸ Gently flushing the tube after each feed can help avoid the issue of feeding tube obstruction. In another incident of a rare complication, a tube was blocked owing to knotting in the stomach.⁹ It happened likely due to leaving an excess length of the tube in the stomach, emphasizing the need to avoid over inserting the tube. Long exposure to the harsh gastric acid is a cause for the tube to break. Forceful flushing of an obstructed tube can cause the distal end, usually a tip to break.¹⁰ In our case though, the tube was fractured in the middle and there was no issue in the earlier feed. The tube was flushed regularly after feeding and no resistance was encountered in doing so. It is not likely that acid or forceful flushing is the cause of the tube fracture in our patient.

When a tube is fractured, it migrates distally owing to the peristalsis in the gut tube. It is essentially managed as an ingested foreign body. A study of endoscopic evaluation of foreign bodies shows that objects longer than 6 cm are at risk of not passing the pylorus even after 48 hours after ingestion.¹¹ Smaller pieces like the tip of a feeding tube may be followed by a serial radiographic evaluation to allow them to pass through the alimentary canal, but for larger foreign bodies like in our case, it is not a wise idea to just follow the passage tube as it carries the risk of intestinal obstruction and an upper gastrointestinal endoscopy is the standard practice for the removal of any ingested foreign body.¹²

Our patient had poor swallowing owing to the stroke and we relied on our clinical judgment to do a laryngoscopic examination for the possibility of the tube being in the throat. And luckily, the tube was still in the esophagus with a proximal end in the laryngopharynx. It was retrieved without difficulty in the same setting. Another reason for the tube still being in an accessible position could have been the identification of the fractured tube before it could migrate to the stomach.

Conclusion:

Fracture of a feeding orogastric tube is a rare complication of enteral feeding. It is sometimes encountered in clinical practice. The use of clinical judgment can help prevent complications in the case of a feeding tube fracture. While it is frequently managed endoscopically, if identified early in and in selected patients, it can be retrieved simply under laryngoscopic vision like in our case.

Acknowledgement

We gratefully acknowledge the work of members of our ICU and the hospital.

Consent For Publication

Written informed consent was obtained from the patient before the submission of the report for the publication of the case and the images.

Conflicts of Interest Statement

None

Funding

None

Authors' contribution

Name of the author: involved in counseling and treatment of the patient. SK(Surendra Khanal) , PSS(Pramesh Sunder Shrestha) collected all the required case information, images, slides, and reports; reviewed the literature, and contributed in both writing and editing the manuscript. AA(Aayush Adhikari), SS(Suraj Shrestha), SKh(Sanjeew Kharel), RK(Ramesh Khadayat) involved in editing the manuscript. All authors read and approved the final manuscript.

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FIGURES

Figure 1: The figure shows a orogastric tube fractured around the middle.

